

We Claim:

## 1. A fingerprint sensor, comprising:

a contact surface for contacting an underside of a finger and for recording a fingerprint of the finger;

a plurality of sensor electrodes mounted below said contact surface; and

at least one protective electrode mounted on or in said contact surface, said protective electrode incompletely covering said plurality of sensor electrodes;

said plurality of sensor electrodes for obtaining a first AC voltage at a prescribed frequency;

said protective electrode for obtaining a second AC voltage essentially at the prescribed frequency;

the second AC voltage having an amplitude being greater than a supply voltage for the fingerprint sensor.

## 2. The fingerprint sensor according to claim 1, wherein said protective electrode is formed as a grating, a grid, or a strip.

3. The fingerprint sensor according to claim 1, wherein:

the first AC voltage has a settable amplitude and the amplitude of the second AC voltage is settable; and

the amplitude of the second AC voltage is greater than the amplitude of the first AC voltage.

4. A method for optimizing the sensitivity of a fingerprint sensor, which comprises:

providing the fingerprint sensor according to claim 1;

setting at least one of the amplitude of the second AC voltage and a phase of the second AC voltage such that a sensitivity of the fingerprint sensor assumes a maximum value and the sensitivity is determined by a local resolution of the fingerprint sensor.

5. A fingerprint sensor, comprising:

a contact surface for contacting an underside of a finger and for recording a fingerprint of the finger;

a plurality of sensor electrodes mounted below said contact surface; and

at least one protective electrode mounted on or in said contact surface, said protective electrode incompletely covering said plurality of sensor electrodes;

said plurality of sensor electrodes for obtaining a first AC voltage at a prescribed frequency;

said protective electrode for obtaining a second AC voltage essentially at the prescribed frequency;

the first AC voltage having a settable phase and the second AC voltage having a settable phase.

6. The fingerprint sensor according to claim 5, wherein said protective electrode is formed as a grating, a grid, or a strip.

7. The fingerprint sensor according to claim 5, wherein:

the first AC voltage has a settable amplitude and the second AC voltage has a settable amplitude; and

the amplitude of the second AC voltage is greater than the amplitude of the first AC voltage.

8. A method for optimizing the sensitivity of a fingerprint sensor, which comprises:

providing the fingerprint sensor according to claim 5;

setting at least one of an amplitude of the second AC voltage and a phase of the second AC voltage such that a sensitivity of the fingerprint sensor assumes a maximum value and the sensitivity is determined by a local resolution of the fingerprint sensor.

9. A fingerprint sensor circuit, comprising:

a fingerprint sensor including a contact surface for contacting an underside of a finger and for recording a fingerprint of the finger, a plurality of sensor electrodes mounted below said contact surface, and at least one protective electrode mounted on or in said contact surface, said protective electrode incompletely covering said plurality of sensor electrodes;

a first AC voltage at a prescribed frequency being applied to said plurality of sensor electrodes;

a second AC voltage essentially at the prescribed frequency being applied to said protective electrode; and

a supply voltage for the fingerprint sensor;

the second AC voltage having an amplitude being greater than the supply voltage.

10. The fingerprint sensor circuit according to claim 9, wherein said protective electrode is formed as a grating, a grid, or a strip.

11. The fingerprint sensor circuit according to claim 9, wherein:

the first AC voltage has a settable amplitude and the amplitude of the second AC voltage is settable; and

the amplitude of the second AC voltage is greater than the amplitude of the first AC voltage.

12. A method for optimizing the sensitivity of a fingerprint sensor, which comprises:

providing the fingerprint sensor circuit according to claim 9;

setting at least one of the amplitude of the second AC voltage and a phase of the second AC voltage such that a sensitivity

of the fingerprint sensor assumes a maximum value and the sensitivity is determined by a local resolution of the fingerprint sensor.

13. A fingerprint sensor circuit, comprising:

a fingerprint sensor including a contact surface for contacting an underside of a finger and for recording a fingerprint of the finger, a plurality of sensor electrodes mounted below said contact surface, and at least one protective electrode mounted on or in said contact surface, said protective electrode incompletely covering said plurality of sensor electrodes;

a first AC voltage at a prescribed frequency being applied to said plurality of sensor electrodes; and

a second AC voltage essentially at the prescribed frequency being applied to said protective electrode;

the first AC voltage having a settable phase and the second AC voltage having a settable phase.

14. The fingerprint sensor circuit according to claim 13, wherein said protective electrode is formed as a grating, a grid, or a strip.

15. The fingerprint sensor circuit according to claim 13,  
wherein:

the first AC voltage has a settable amplitude and the second  
AC voltage has a settable amplitude; and

the amplitude of the second AC voltage is greater than the  
amplitude of the first AC voltage.

16. A method for optimizing the sensitivity of a fingerprint  
sensor, which comprises:

providing the fingerprint sensor according to claim 13;

setting at least one of an amplitude of the second AC voltage  
and a phase of the second AC voltage such that a sensitivity  
of the fingerprint sensor assumes a maximum value and the  
sensitivity is determined by a local resolution of the  
fingerprint sensor.